18. (Twice Amended) A method for manufacturing an electronic display circuit, the electronic display circuit including a circuit unit; and

a display device, the display device including a thin film patterning substrate, the method comprising:

providing a substrate;

forming banks on a surface of said substrate so as to form a plurality of areas partitioned by said banks, each of which has a width of a (μm) and a height of c (μm);

providing a ink-jet droplets of a liquid material in said areas to form a thin film layer, said ink-jet droplets having a diameter of d (μm),

wherein said banks and said ink-jet droplets satisfy a relationship d/2<b<5d.

REMARKS

Claims 1-12 and 15-18 are pending. By this Amendment, claims 13, 14 and 19-80 are cancelled and 1-12 and 15-18 are amended.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

I. CONSIDERATION OF APPLICANT'S INFORMATION DISCLOSURE STATEMENT IS RESPECTFULLY REQUESTED

The Office Action indicates that the Information Disclosure Statement fails to comply with 37 C.F.R. 1.98(a)(3). English language abstracts for the documents listed in the Information Disclosure Statement were attached in the Amendment filed January 2, 2002. Applicants respectfully request that the references in the Information Disclosure Statement be considered.

II. THE DRAWINGS SATISFY ALL FORMAL REQUIREMENTS

The Office Action objects to the drawings. The specification has been amended to obviate this objection.

III. THE CLAIMS SATISFY THE REQUIREMENT OF 35 U.S.C. §112, SECOND PARAGRAPH

The Office Action rejects the claims under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

Applicants had previously amended the claims to be in proper U.S. Patent Practice Format. Withdrawal of this rejection is respectfully requested.

IV. THE CLAIMS DEFINE PATENTABLE SUBJECT MATTER

The Office Action rejects claims 1-9, 13-22, 28, 29, 48, 69-73 and 75-79 under 35 U.S.C. §102(e) over JP 11-0403542 to Shirasaki et al. This rejection is respectfully traversed. Shirasaki does not disclose forming banks on a surface of a substrate; said banks having a width of A and a height of C, providing ink-jet droplets and wherein said banks and said inkjet droplets satisfy relationship $d/2<b<5d$ as recited in independent claims 1, 17 and 18. Instead, Shirasaki is devoid of this feature.

As shown at e.g. Figure 1, when the width of the bank is made A, it is necessary in order for the liquid material to be coated on uniformly without overflowing into adjacent pixel areas that the value thereof be such that a is greater than d/4 relative the diameter d of the liquid droplets of the liquid discharge and inkjet process.

The Office Action rejects claim 10 under 35 U.S.C. §103(a) over Shirasaki in view of USP 6,373,187 to Nagama et al. This rejection is respectfully traversed.

Claim 10 depends from independent claim 1, which as previously discussed defines patentable subject matter. Therefore, claim 10 also defines patentable subject matter. Nagama does not provide the deficiencies of Shirasaki.

V. CONCLUSION

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Michael Britton
Registration No. 47,260

JAO:MB/jfl

Attachments:
Appendix
Petition for Extension of Time

Date: DRAFT

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

APPENDIX

Changes to Title:

The following is a marked-up version of the amended title:

METHOD OF FORMING THIN FILM PATTERNING SUBSTRATE ~~AND SURFACE TREATMENT THEREFOR~~INCLUDING FORMATION OF BANKS

Changes to Specification:

Page 46, line 24 through Page 47, line 5:

Next, the second interlayer insulating film 52 is formed and a contact hole is formed in this interlayer insulating film in the portion corresponding to the relay electrode 35. Next, after forming an ITO film over the entire surface of the second interlayer insulating film 52, patterning is performed, and a pixel electrode ~~42~~ 41 is formed, for each pixel 7, electrically connected to the source-drain region in the second TFT 30 via the contact hole.

Page 75, line 24 through Page 76, line 5:

The bank layer BANK is formed along the data line SIG and the scanning lines GATE, thicker than the organic semiconductor film ~~41~~43, and thereon is formed the opposing electrode OP. Therefore, due to the presence of the bank layer BANK, large capacitances can be prevented from becoming parasitic on the data line SIG. That is, because the thick bank layer BANK is also interposed between the data line SIG and the opposing electrode OP, the parasitic capacitance produced in the data line SIG is extremely small. Because of that fact, the loads on the drive circuits 3 and 4 can be reduced, and it becomes possible to effect low power consumption operation and/or faster display operations.

Page 76, line 23 through Page 77, line 6:

If such a two-layer structure is effected, moreover, the organic semiconductor film ~~41~~ 43 comes in contact with the lower layer side insulating film made of the inorganic material, but it does not come in contact with the upper layer side insulating film 62 made of the

organic material. Because of that, the organic semiconductor film ~~41~~ 43 will not deteriorate under the influence of the upper layer side insulating film 62 configured of the organic material, wherefore, in the thin film light emitting element 40, there is no decline in either light emitting efficiency or reliability.

Page 81, lines 5-16:

Lower layer side insulating film formation process (Fig. 16A- 16C): Next, a film (an inorganic film for forming the lower layer side insulating film 61) consisting of an inorganic material is formed in a PECVD process or the like on the front surface of the second interlayer insulating film 52. This film is formed of the inorganic material and to the thickness described in the embodying aspect described earlier. This film is formed to a thickness that is greater than the thickness of the organic semiconductor film ~~41~~43. If the organic semiconductor film 41 is formed to a thickness of 0.05 μm to 0.2 μm, for example, the film of inorganic material is formed to a thickness of approximately 0.2 μm to 1.0 μm.

Page 81, line 17 through Page 82, line 4:

Upper layer side insulating film formation process (Fig. 17A - 17C): A resist (upper layer side insulating film 62) is then formed along the scanning line GATE and the data line SIG. This upper layer side insulating film 62 is configured of the organic material of the embodying aspect described earlier. The thickness of the upper layer side insulating film 62 is formed to a height wherewith it can become a bulwark of such extent that the liquid thin film material will not overflow into the adjacent pixel areas even when the pixel area is filled with the liquid thin film material. If the organic semiconductor film ~~41~~ 43 is formed to a thickness of 0.05 μm to 0.2 μm, or example, the upper layer side insulating film 62 is formed to a height of 1 μm to 2 μm or so.

Changes to Claims:

1. (Twice Amended) A method for manufacturing a ~~A~~ thin film patterning substrate, ~~used for forming thin films into patterns by an ink jet method,~~ comprising:

~~a surface whereof are formed banks and areas to be coated, partitioned by said banks;~~

~~said banks having a width a (μm), a height thereof is made c (μm), a width of said areas to be coated is made b (μm), and an ink jet liquid droplet diameter of liquid material forming the thin film is made d (μm), said bank is formed so as to~~ providing a substrate;

forming banks on a surface of said substrate so as to form a plurality of areas partitioned by said banks, each of which has a width of a (μm) and a height of c (μm);

providing a ink-jet droplets of a liquid material in said areas to form a thin film layer, said ink-jet droplets having a diameter of d (μm),

wherein said banks and said ink-jet droplets satisfy a relationship $d/2 < b < 5d$.

2. (Twice Amended) A method for manufacturing a thin film ~~The~~ patterning substrate according to claim 1, said banks being formed so as to satisfy relationship $a > d/4$.

3. (~~Twice~~ Three Times Amended) A method for manufacturing a ~~The~~ thin film ~~element~~ patterning substrate according to claim 1, said banks being formed to satisfy a relationship $c > t_0$ (where t_0 (μm) is film thickness of the thin film layer).

4. (~~Twice~~ Three Times Amended) A method for manufacturing a ~~The~~ thin film patterning substrate according to claim 1, said banks being formed so as to satisfy relationship $c > d/2b$.

5. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 1, further comprising: at least upper surfaces of said banks being formed of an organic substance.

6. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 1, further comprising: upper surfaces and side surfaces of said banks being formed of an organic substance.

7. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 1, further comprising: forming said banks ~~being formed~~ in two layers including a lower-layer inorganic substance and an upper-layer organic substance.

8. (Twice Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 7, further comprising: forming said banks ~~being formed~~ in two layers including a lower-layer inorganic substance and an upper-layer organic substance, and at least side surfaces of said inorganic substance are not covered by said organic substance.

9. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 1, further comprising: said areas to be coated being an inorganic substance.

10. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 1, further comprising: upper surfaces of upper portions of said banks having liquid droplet reservoir structures.

11. (~~Twice~~ Three Times Amended) A method for manufacturing a~~The~~ thin film patterning substrate according to claim 5, further comprising: performing surface treatment ~~being performed~~ so that an angle of contact of the organic substance surface forming said banks is 50° or greater, an angle of contact with the inorganic substance forming said banks is

20° to 50°, and an angle of contact of surfaces of said areas to be coated with said thin film liquid material is 30° or greater.

12. (Twice Amended) A method for manufacturing a ~~The~~ thin film patterning substrate according to claim 11, further comprising: effecting said surface modification ~~being effected~~ by plasma treatment.

15. (Twice Amended) A method for manufacturing a ~~The~~ thin film ~~element~~ patterning substrate according to claim ~~14~~1, ~~comprising:~~ said thin film ~~element~~ layers being ~~an~~ organic EL ~~element~~ elements~~wherein organic thin films having light emission colors selected from among red, green, and blue are independently patterned~~.

16. (Twice Amended) ~~The~~ A method for manufacturing a thin film ~~element~~ patterning substrate according to claim ~~14~~1, said thin film ~~element being a color filter wherein organic thin films that transmit only light emission selected from among red, green, and blue are independently patterned~~layers being color filters.

17. (~~Twice~~ Three Times Amended) A method for manufacturing a display device, ~~comprising: a thin film element cited in claim 1~~ the display device including a thin film patterning substrate, the method comprising:

providing a substrate;

forming banks on a surface of said substrate so as to form a plurality of areas partitioned by said banks, each of which has a width of a (μm) and a height of c (μm);

providing a ink-jet droplets of a liquid material in said areas to form a thin film layer, said ink-jet droplets having a diameter of d (μm),

wherein said banks and said ink-jet droplets satisfy a relationship $d/2<b<5d$.

18. (Twice Amended) ~~An~~ A method for manufacturing an electronic display ~~unit, comprising: the display device cited in claim 17 and a circuit device for said display device~~circuit, the electronic display circuit including a circuit unit; and

a display device, the display device including a thin film patterning substrate, the method comprising:

providing a substrate;

forming banks on a surface of said substrate so as to form a plurality of areas partitioned by said banks, each of which has a width of a (μm) and a height of c (μm);

providing a ink-jet droplets of a liquid material in said areas to form a thin film layer, said ink-jet droplets having a diameter of d (μm),

wherein said banks and said ink-jet droplets satisfy a relationship $d/2<b<5d$.